Thematic issue: Biologics in autoimmune diseases

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Autoimmune diseases are a heterogeneous group of conditions with diverse clinical manifestations and extremely complex pathogenesis. The better understating of innate and adaptive immunity, the identification of structures and interactions leading to a breakdown of self-tolerance, and the recognition of cross-talk between immunity with other biological systems continue to grow, paving the way to novel treatments for autoimmune conditions. Antibodies are superbly suited to be developed into therapeutics with appropriate immune stimulatory or inhibitory activity. In the 1990s, tumor necrosis factor (TNF) inhibitors were the first biological disease-modifying antirheumatic drugs (DMARDs) used to treat rheumatic conditions. Since then, new biological drugs have emerged, such as inhibitors of IL-1, IL-6 and others, with different mechanisms of action that include inhibitions of cytokines, depletion of B cells and the inhibition of T-cell co-stimulation. Clinical trials remain open to test their efficacy and safety, as well as to measure clinical outcomes in different conditions and patient populations. The industry is also eager to develop biotherapeutics that are similar but cheaper than the currently existing biologics; these are the so-called “biosimilars.” Thus, biologic therapy has become a new weapon in the war against autoimmune diseases and it is rapidly expanding in terms of its specificity, efficacy and safety profiles compared with the traditional non-biologic DMARDs. These agents have completely revolutionized the natural history of diseases such as rheumatoid arthritis (AR) and other inflammatory arthritis, ANCA-associated vasculitis and systemic lupus erythematous (SLE). However, although life-changing in most patients, the adverse effects accompanied with biologic therapy such as infection and immunogenicity make it quite important to decide appropriately when and how to use these agents. Research in order to identify new candidate targets of biologic therapy in autoimmune disease is currently ongoing. Based on this background, we assembled this special issue for International Immunopharmacology to describe the molecular aspects of the mechanisms of action of biological agents, discuss the adverse effects and limitations of established therapies and analyze the alternative approaches in autoimmune diseases, such as RA, SLE, Sjögren's Syndrome (SS), and vasculitis. In this special issue, Roccatello and coworkers [1] summarized the biologic agents currently available to treat RA, mainly focusing on non anti-TNF agents. Lutalo PM and D'Cruz DP [2] gave an update on the use of biologics in ANCA-associated vasculitis (AAV) and provided prospective biologic therapies that might be used in the management of AAV the in future. The use of biologics in ANCA-negative vasculitis was summarized by Loricera J et al. [3]. Gheitasi H [4] on the behalf of SS Study Group, Autoimmune Diseases Study Group and Spanish Society of Internal Medicine reported an analysis about the available therapeutic approaches in a cohort of 1120 patients with SS. Sciascia et al. [5] detailed a state-of-the-art review about available and upcoming biological therapies on SLE. Lopez-Pedrera et al., give new insights of alternative treatment for patients with antiphospholipid syndrome others than oral anticoagulation [6] and Lie et al. [7] delivered an overview of emerging biosimilar therapies for autoimmune conditions, providing a new insight into pros and cons of these new treatment strategies in rheumatic diseases. As clinical applications of the biological agent expand, and other classes join the revolution in the treatment of autoimmune disorders, an updated insight of available and upcoming therapeutic drugs will become increasingly important, with the potential to dramatically improve patient care and management.

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